FIG.1

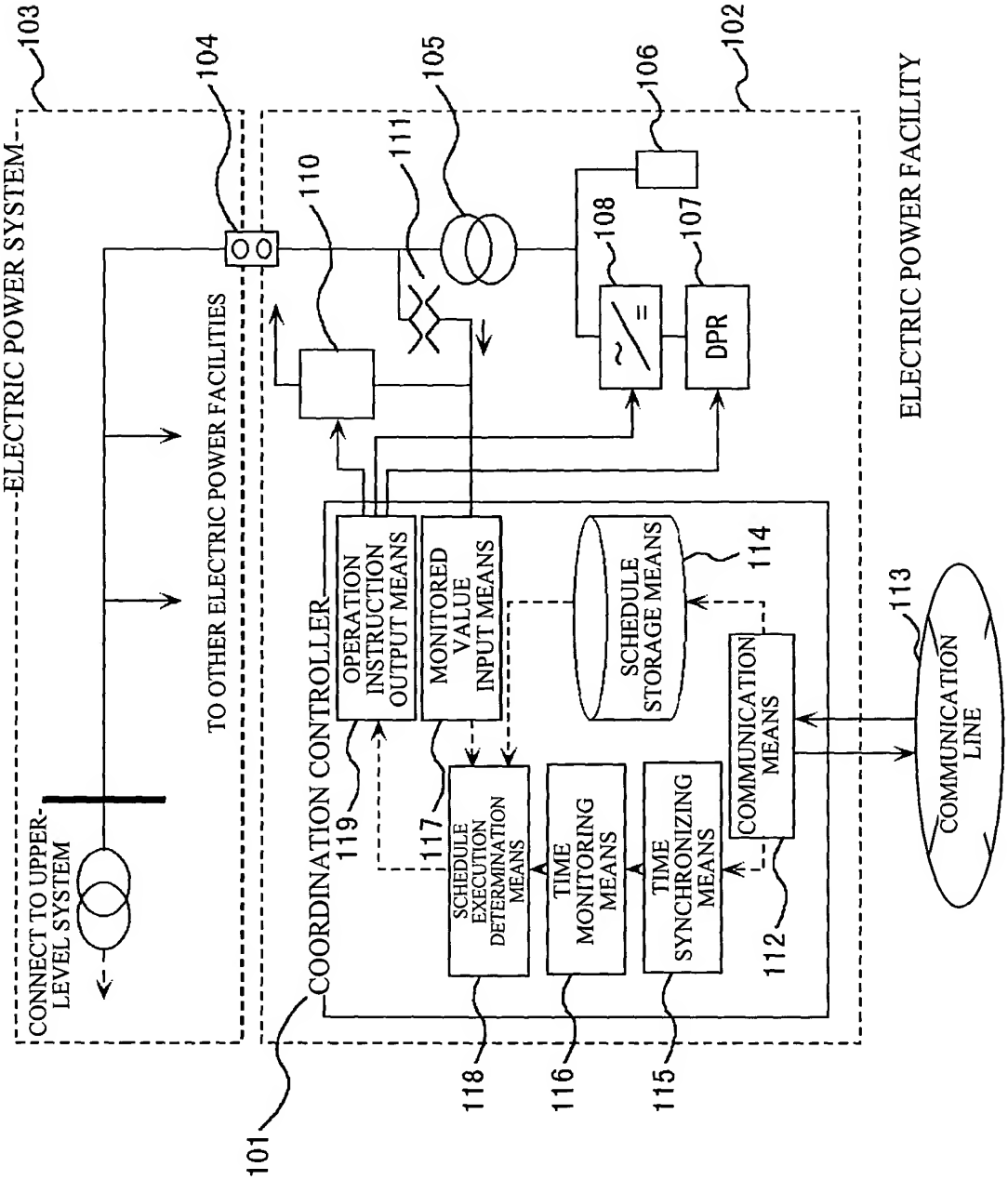

ELECTRIC POWER SYSTEM
103
CONNECT TO UPPER-LEVEL SYSTEM
TO OTHER ELECTRIC POWER FACILITIES
104
105
106
102
ELECTRIC POWER FACILITY
110
111
108
107
DPR
COORDINATION CONTROLLER
OPERATION INSTRUCTION OUTPUT MEANS
MONITORED VALUE INPUT MEANS
SCHEDULE STORAGE MEANS
114
113
COMMUNICATION LINE
COMMUNICATION MEANS
119
117
SCHEDULE EXECUTION DETERMINATION MEANS
TIME MONITORING MEANS
TIME SYNCHRONIZING MEANS
112
101
118
116
115

FIG.2

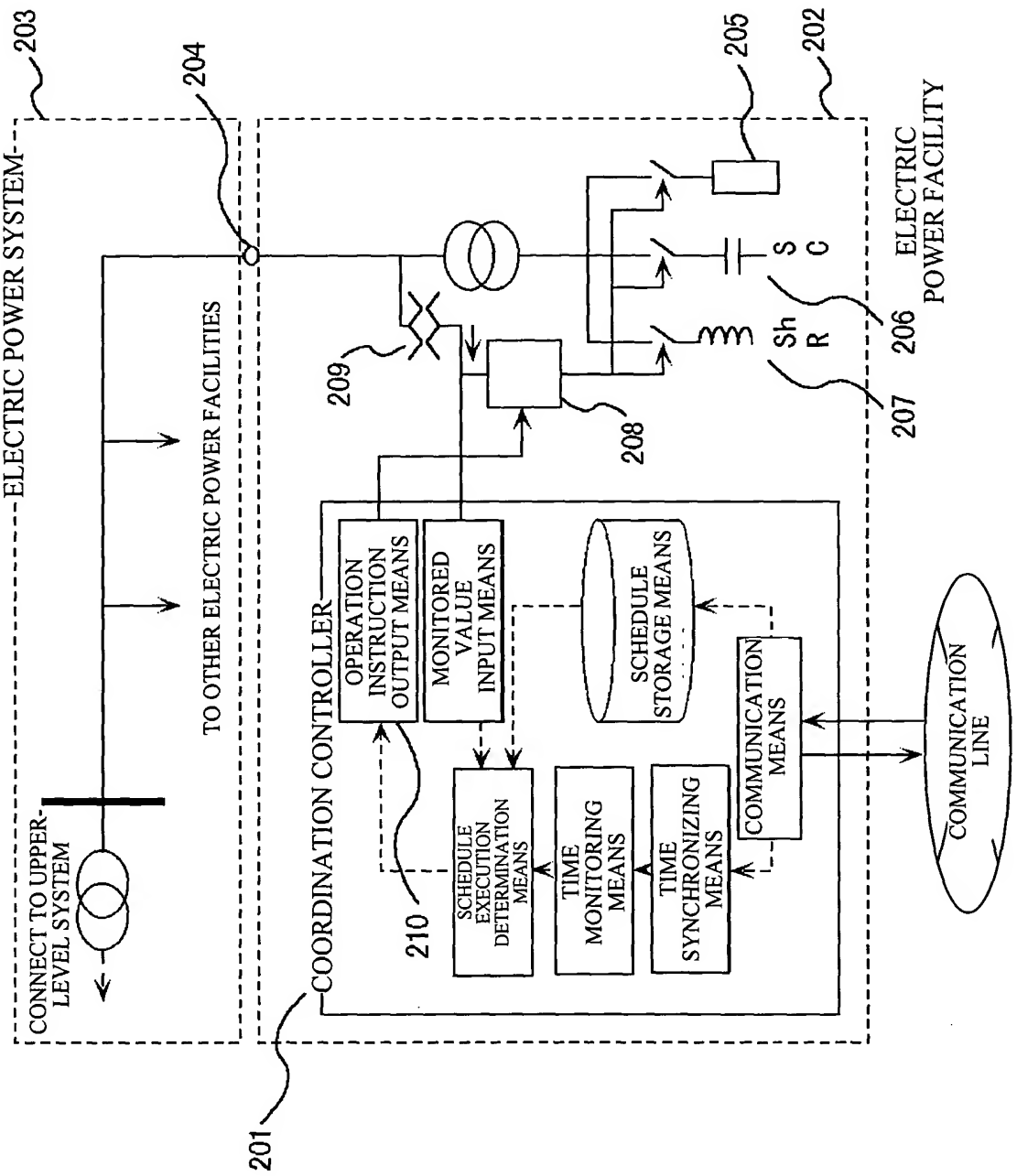

ELECTRIC POWER SYSTEM
203
204
205
202
CONNECT TO UPPER-LEVEL SYSTEM
TO OTHER ELECTRIC POWER FACILITIES
ELECTRIC POWER FACILITY
209
208
206
207
S
C
Sh
R
COORDINATION CONTROLLER
OPERATION INSTRUCTION OUTPUT MEANS
MONITORED VALUE INPUT MEANS
SCHEDULE STORAGE MEANS
SCHEDULE EXECUTION DETERMINATION MEANS
TIME MONITORING MEANS
TIME SYNCHRONIZING MEANS
COMMUNICATION MEANS
210
COMMUNICATION LINE
201

FIG.3

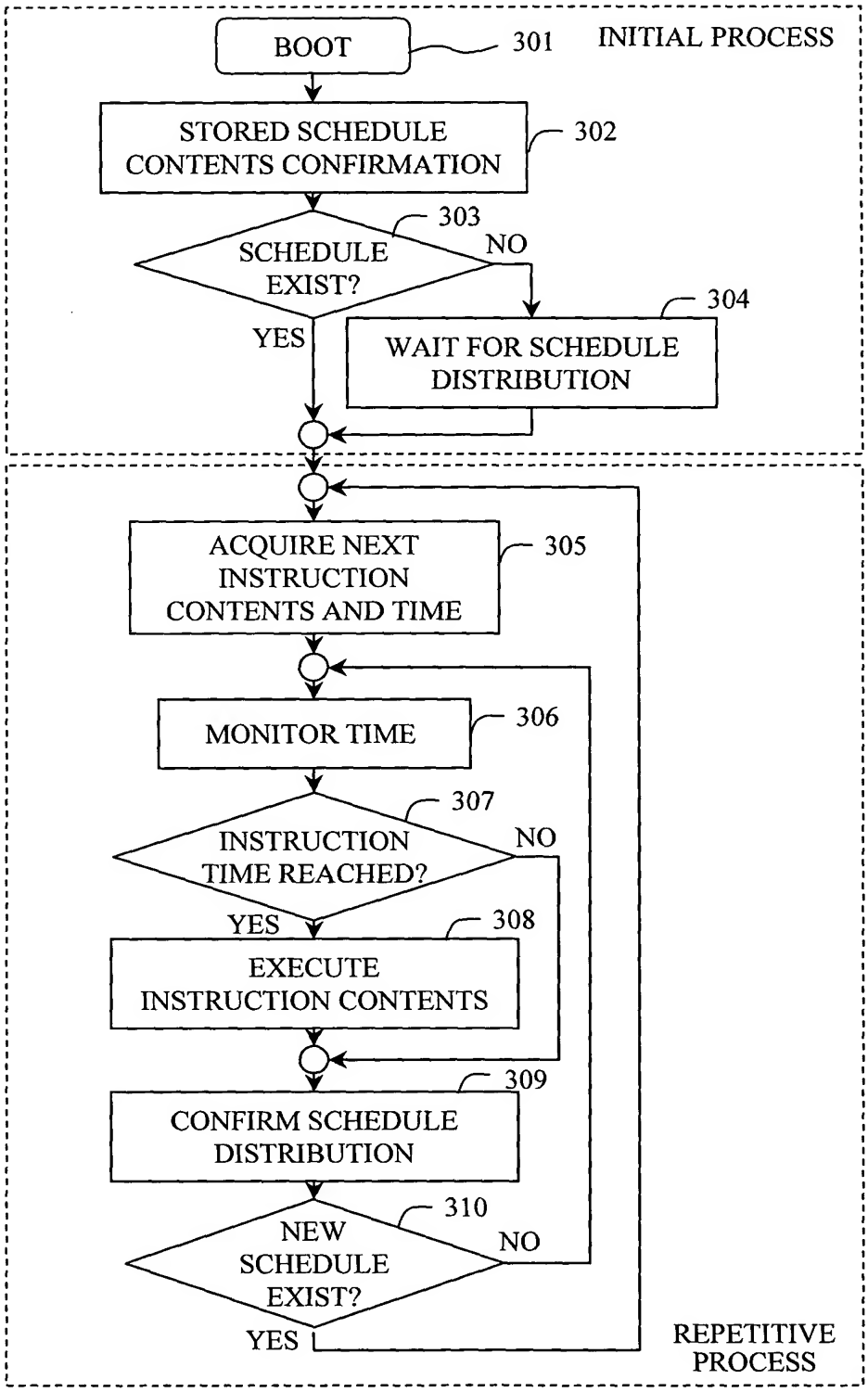

BOOT
301
INITIAL PROCESS
STORED SCHEDULE CONTENTS CONFIRMATION
302
303
SCHEDULE EXIST?
NO
YES
304
WAIT FOR SCHEDULE DISTRIBUTION
ACQUIRE NEXT INSTRUCTION CONTENTS AND TIME
305
MONITOR TIME
306
307
INSTRUCTION TIME REACHED?
NO
YES
308
EXECUTE INSTRUCTION CONTENTS
309
CONFIRM SCHEDULE DISTRIBUTION
310
NEW SCHEDULE EXIST?
NO
YES
REPETITIVE PROCESS

FIG.4

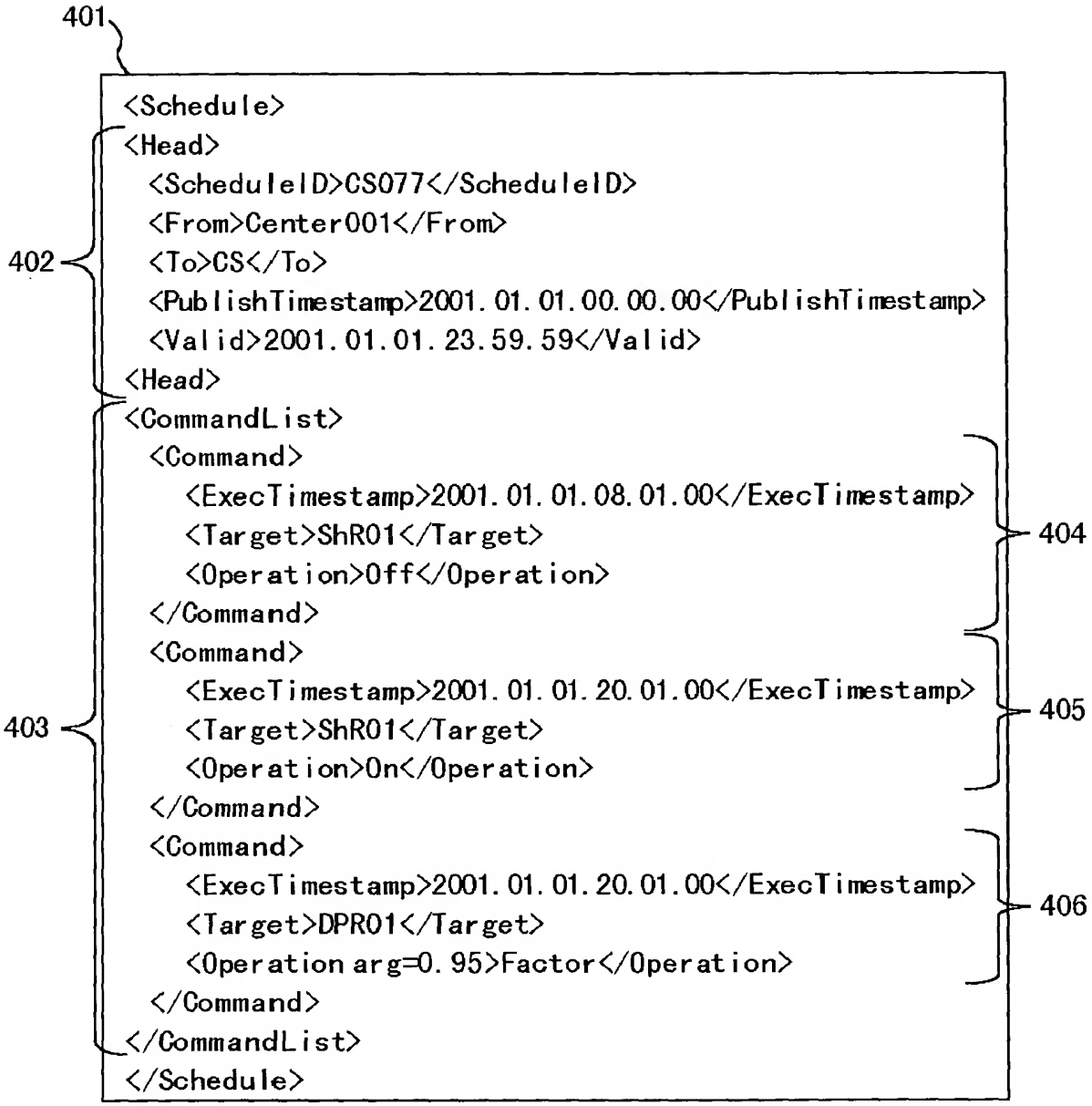

401
<Schedule>
<Head>
<ScheduleID>CS077</ScheduleID>
<From>Center001</From>
<To>CS</To>
<PublishTimestamp>2001.01.01.00.00.00</PublishTimestamp>
<Valid>2001.01.01.23.59.59</Valid>
<Head>
<CommandList>
<Command>
<ExecTimestamp>2001.01.01.08.01.00</ExecTimestamp>
<Target>ShR01</Target>
<Operation>Off</Operation>
</Command>
<Command>
<ExecTimestamp>2001.01.01.20.01.00</ExecTimestamp>
<Target>ShR01</Target>
<Operation>On</Operation>
</Command>
<Command>
<ExecTimestamp>2001.01.01.20.01.00</ExecTimestamp>
<Target>DPR01</Target>
<Operation arg=0.95>Factor</Operation>
</Command>
</CommandList>
</Schedule>
402
403
404
405
406

FIG.5

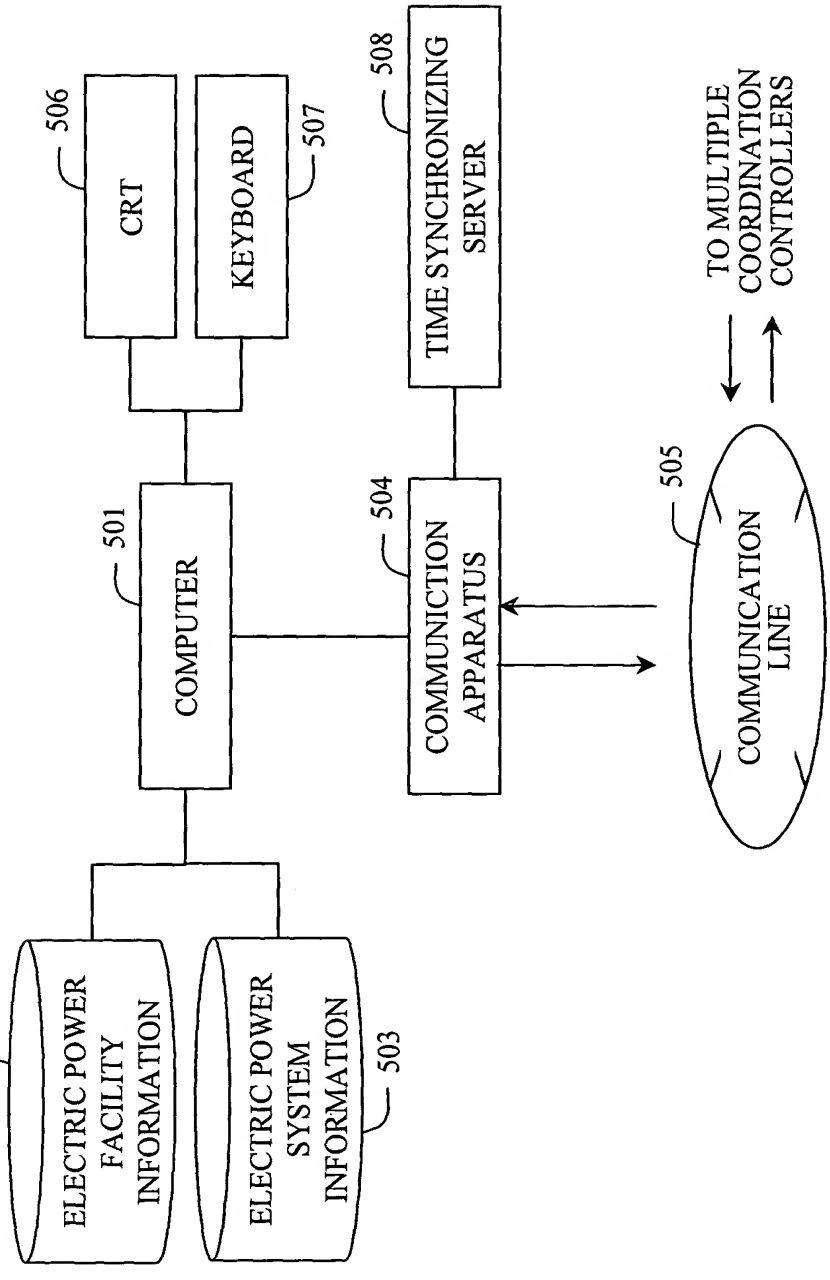

506
CRT
507
KEYBOARD
508
TIME SYNCHRONIZING SERVER
TO MULTIPLE COORDINATION CONTROLLERS
501
COMPUTER
504
COMMUNICTION APPARATUS
505
COMMUNICATION LINE
502
ELECTRIC POWER FACILITY INFORMATION
503
ELECTRIC POWER SYSTEM INFORMATION

FIG.6

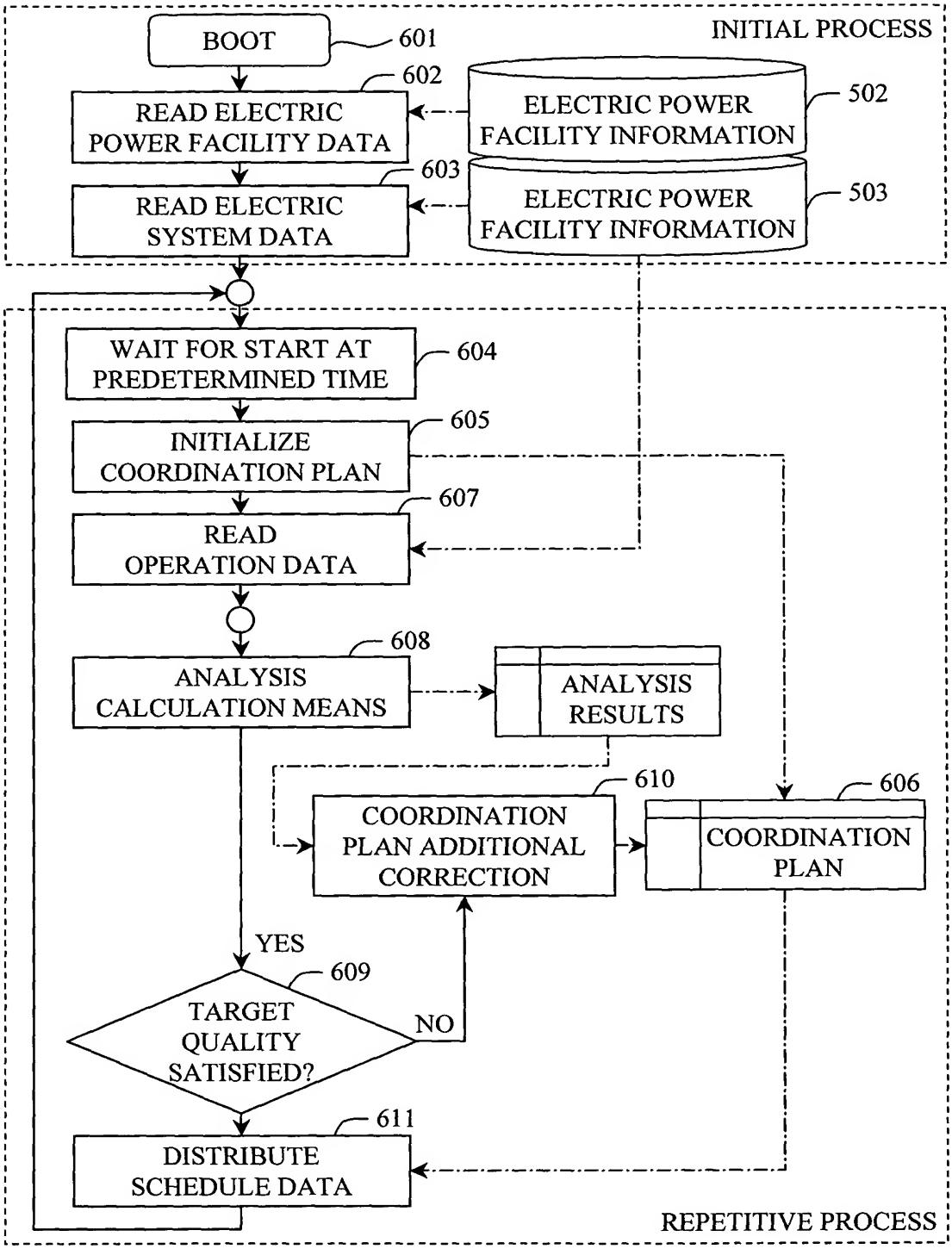

INITIAL PROCESS
BOOT
601
READ ELECTRIC POWER FACILITY DATA
602
ELECTRIC POWER FACILITY INFORMATION
502
READ ELECTRIC SYSTEM DATA
603
ELECTRIC POWER FACILITY INFORMATION
503
WAIT FOR START AT PREDETERMINED TIME
604
INITIALIZE COORDINATION PLAN
605
READ OPERATION DATA
607
ANALYSIS CALCULATION MEANS
608
ANALYSIS RESULTS
COORDINATION PLAN ADDITIONAL CORRECTION
610
COORDINATION PLAN
606
YES
TARGET QUALITY SATISFIED?
609
NO
DISTRIBUTE SCHEDULE DATA
611
REPETITIVE PROCESS

FIG.7

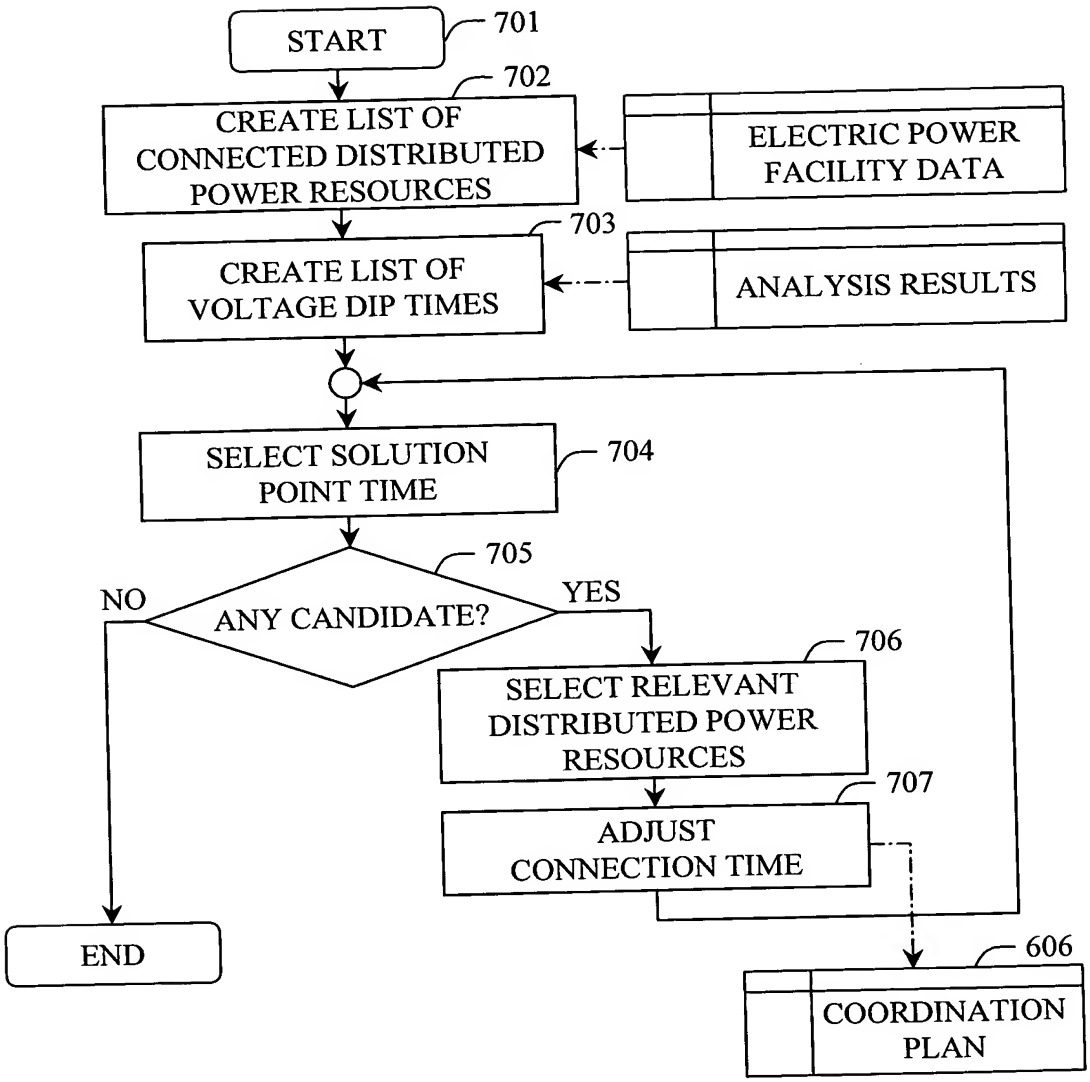

START
701
CREATE LIST OF CONNECTED DISTRIBUTED POWER RESOURCES
702
ELECTRIC POWER FACILITY DATA
CREATE LIST OF VOLTAGE DIP TIMES
703
ANALYSIS RESULTS
SELECT SOLUTION POINT TIME
704
ANY CANDIDATE?
705
NO
YES
SELECT RELEVANT DISTRIBUTED POWER RESOURCES
706
ADJUST CONNECTION TIME
707
END
606
COORDINATION PLAN

FIG.8

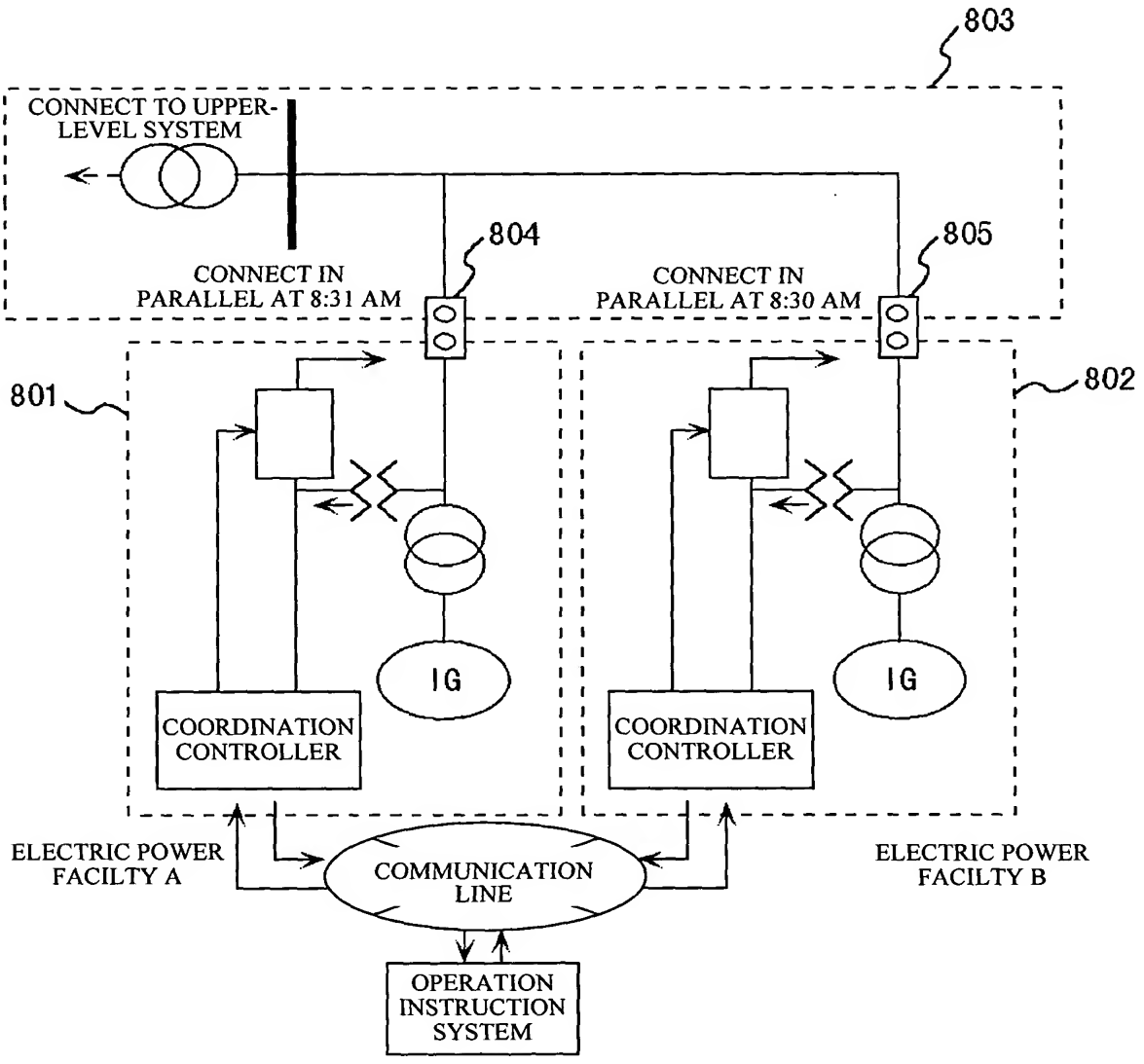

803
CONNECT TO UPPER-LEVEL SYSTEM
804
805
CONNECT IN PARALLEL AT 8:31 AM
CONNECT IN PARALLEL AT 8:30 AM
801
802
IG
IG
COORDINATION CONTROLLER
COORDINATION CONTROLLER
ELECTRIC POWER FACILTY A
COMMUNICATION LINE
ELECTRIC POWER FACILTY B
OPERATION INSTRUCTION SYSTEM

FIG.9

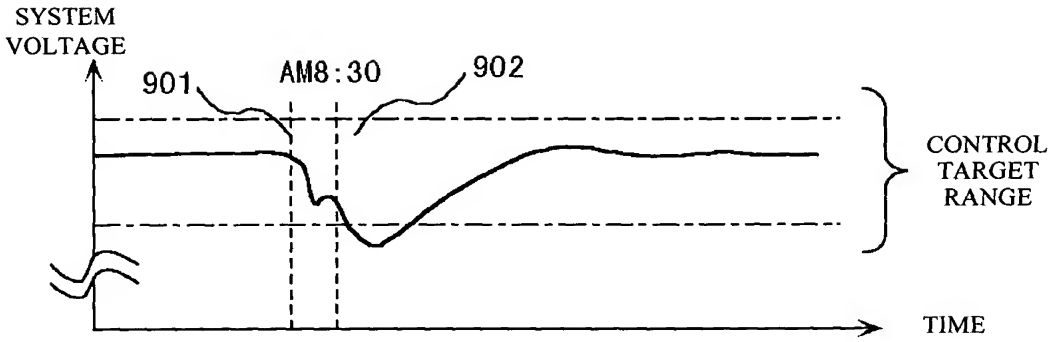

SYSTEM
VOLTAGE
901
AM8:30
902
CONTROL
TARGET
RANGE
TIME

FIG.10

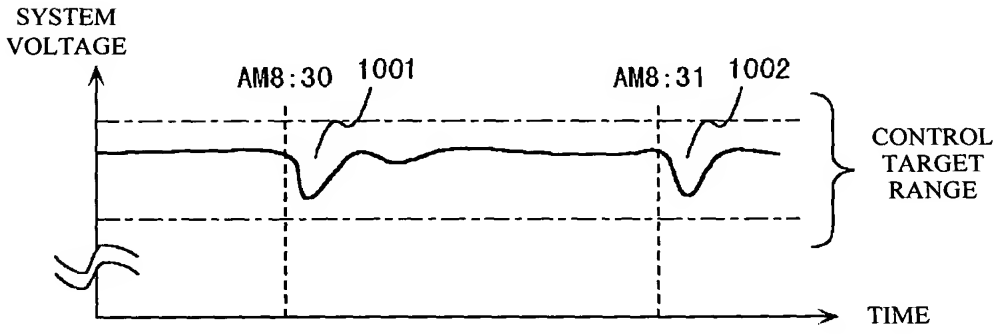

SYSTEM
VOLTAGE
AM8:30
1001
AM8:31
1002
CONTROL
TARGET
RANGE
TIME

FIG.11

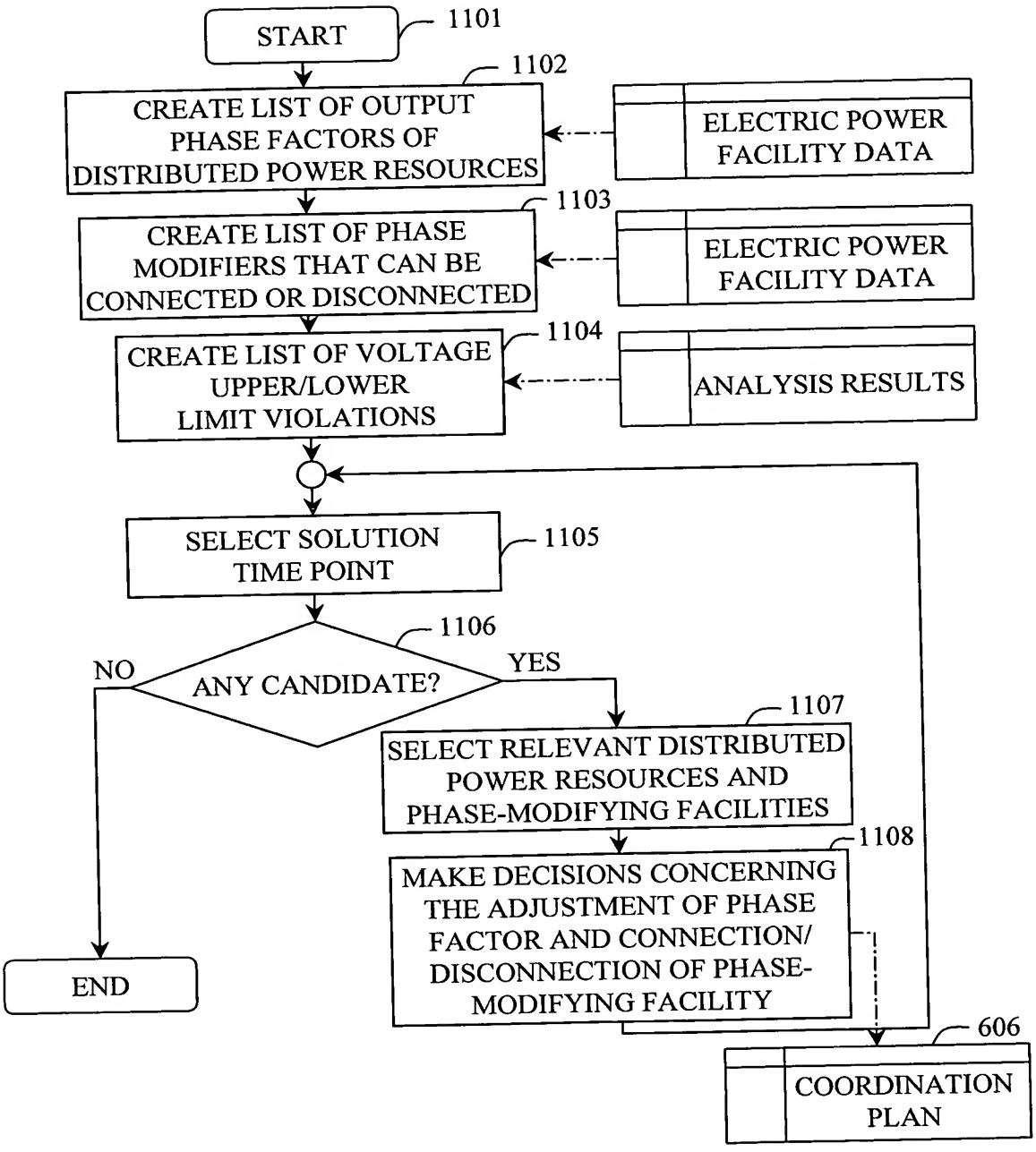

START
1101
CREATE LIST OF OUTPUT PHASE FACTORS OF DISTRIBUTED POWER RESOURCES
1102
ELECTRIC POWER FACILITY DATA
CREATE LIST OF PHASE MODIFIERS THAT CAN BE CONNECTED OR DISCONNECTED
1103
ELECTRIC POWER FACILITY DATA
CREATE LIST OF VOLTAGE UPPER/LOWER LIMIT VIOLATIONS
1104
ANALYSIS RESULTS
SELECT SOLUTION TIME POINT
1105
ANY CANDIDATE?
1106
NO
YES
SELECT RELEVANT DISTRIBUTED POWER RESOURCES AND PHASE-MODIFYING FACILITIES
1107
MAKE DECISIONS CONCERNING THE ADJUSTMENT OF PHASE FACTOR AND CONNECTION/ DISCONNECTION OF PHASE-MODIFYING FACILITY
1108
END
606
COORDINATION PLAN

FIG.12

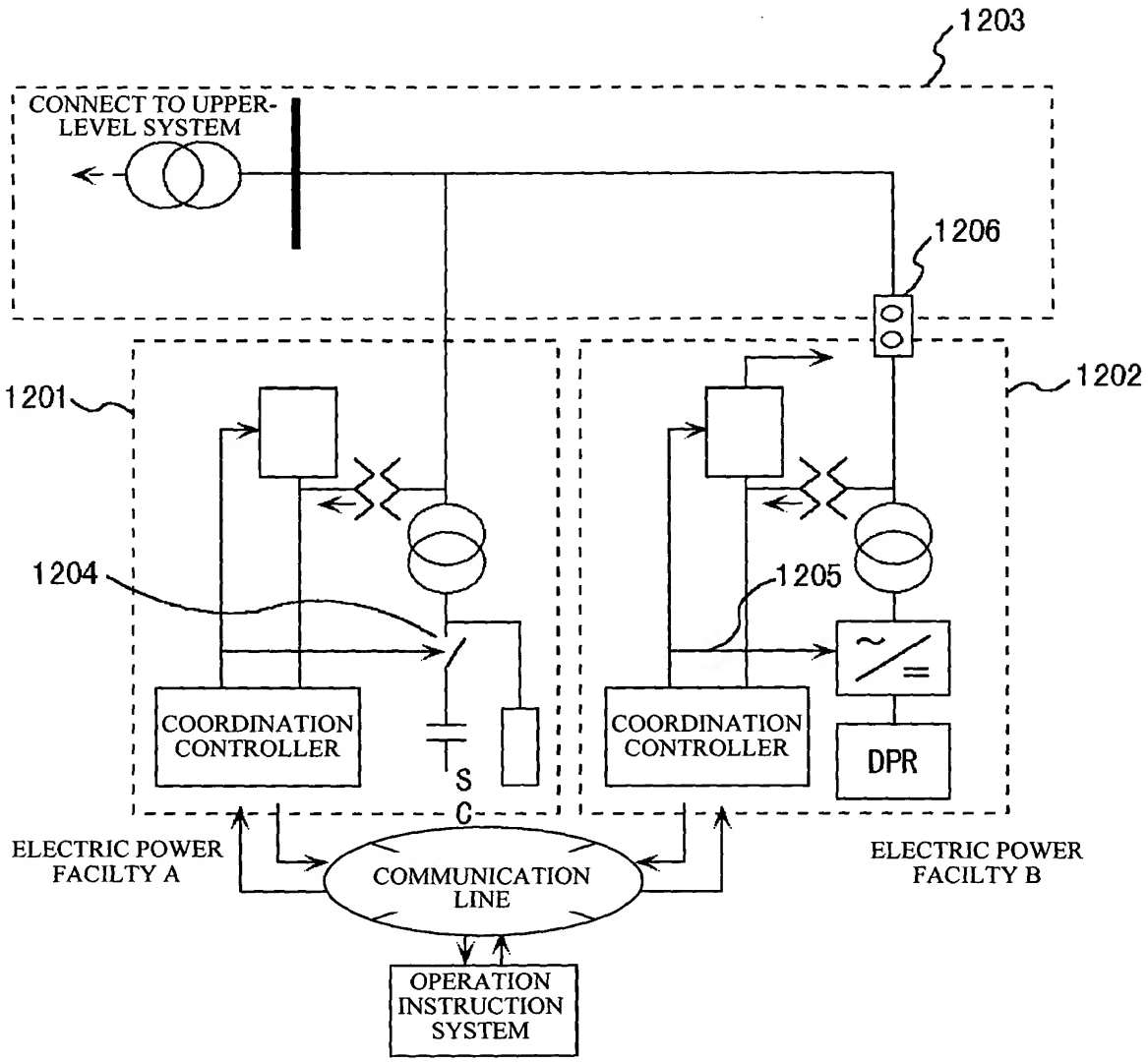

1203
CONNECT TO UPPER-LEVEL SYSTEM
1206
1201
1202
1204
1205
COORDINATION CONTROLLER
COORDINATION CONTROLLER
DPR
S
C
ELECTRIC POWER FACILTY A
COMMUNICATION LINE
ELECTRIC POWER FACILTY B
OPERATION INSTRUCTION SYSTEM

FIG.13

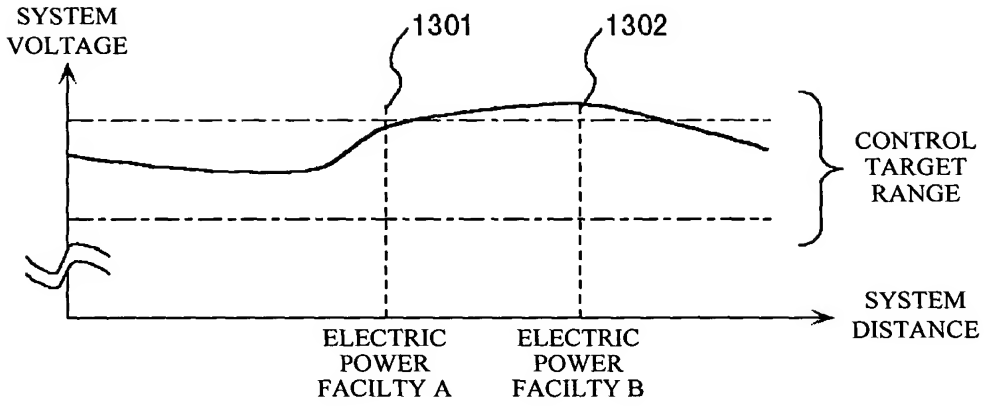

SYSTEM VOLTAGE
1301
1302
CONTROL TARGET RANGE
SYSTEM DISTANCE
ELECTRIC POWER FACILTY A
ELECTRIC POWER FACILTY B

FIG.14

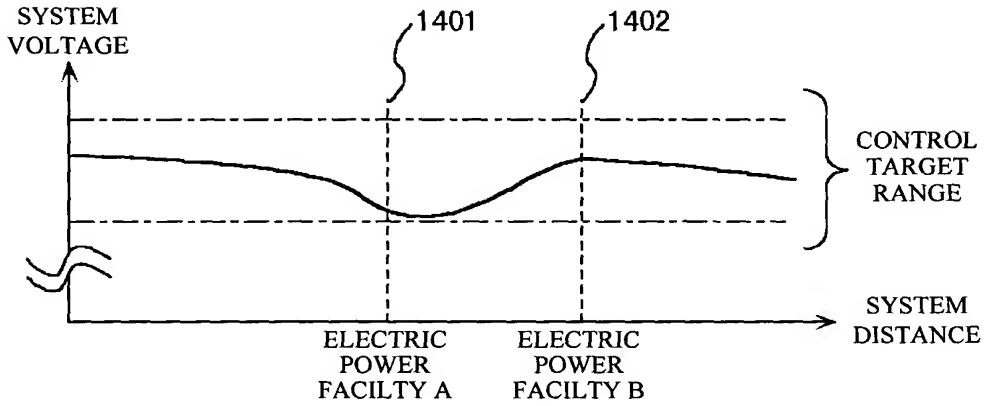

SYSTEM VOLTAGE
1401
1402
CONTROL TARGET RANGE
SYSTEM DISTANCE
ELECTRIC POWER FACILTY A
ELECTRIC POWER FACILTY B

FIG.15

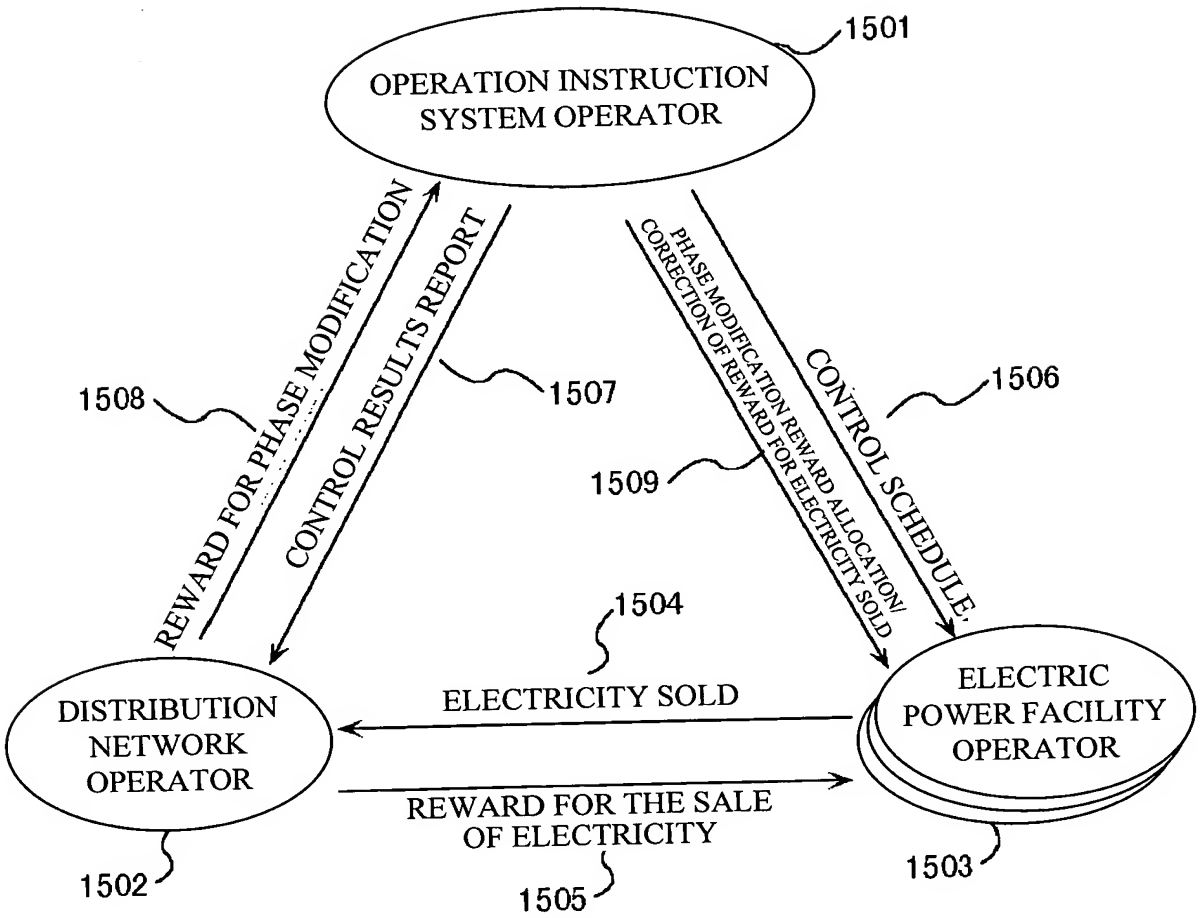
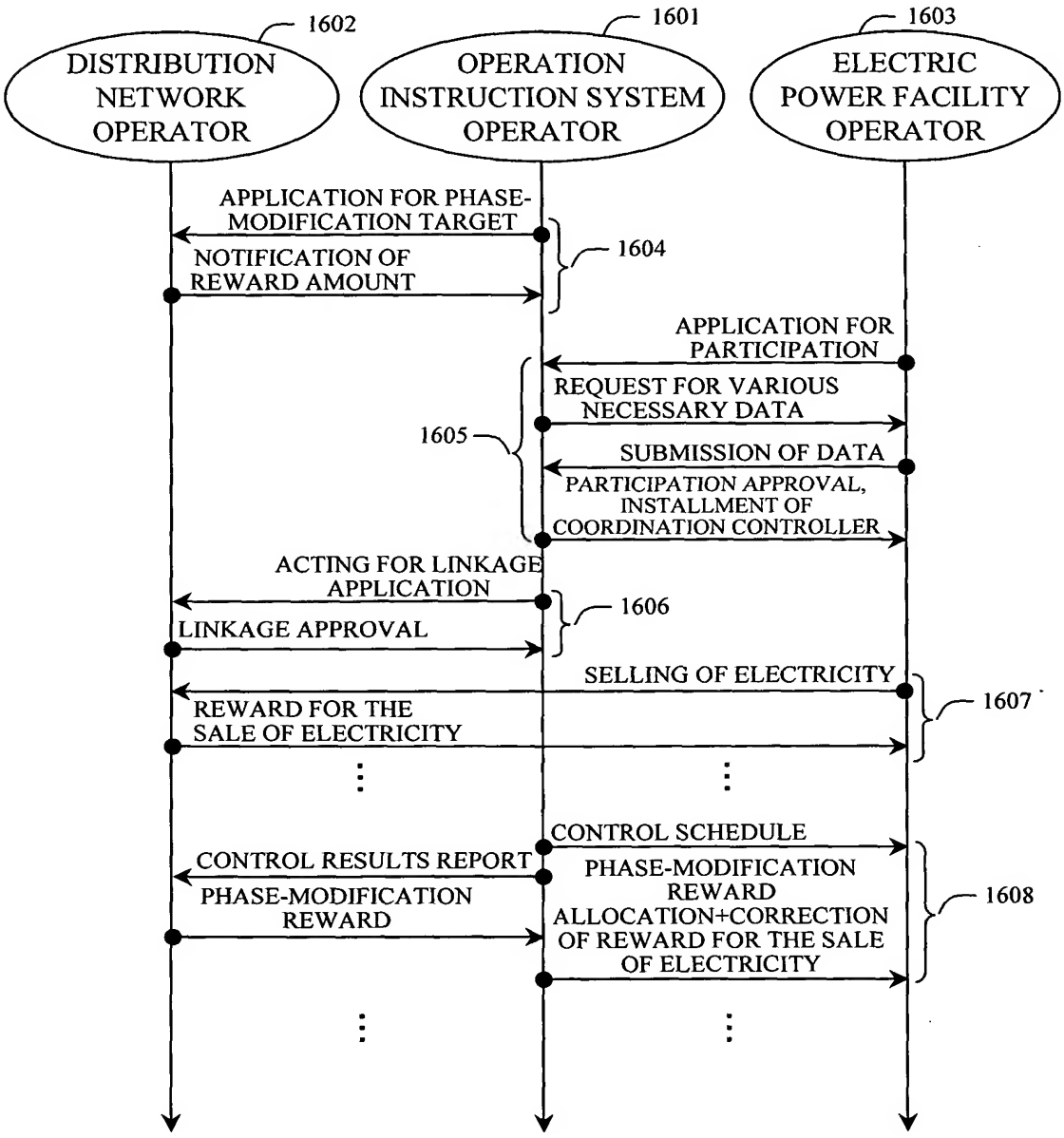

OPERATION INSTRUCTION SYSTEM OPERATOR
1501
REWARD FOR PHASE MODIFICATION
CONTROL RESULTS REPORT
PHASE MODIFICATION REWARD ALLOCATION/ CORRECTION OF REWARD FOR ELECTRICITY SOLD
CONTROL SCHEDULE
1508
1507
1506
1509
1504
ELECTRICITY SOLD
DISTRIBUTION NETWORK OPERATOR
ELECTRIC POWER FACILITY OPERATOR
REWARD FOR THE SALE OF ELECTRICITY
1502
1505
1503

FIG.16


1602
DISTRIBUTION NETWORK OPERATOR
1601
OPERATION INSTRUCTION SYSTEM OPERATOR
1603
ELECTRIC POWER FACILITY OPERATOR
APPLICATION FOR PHASE-MODIFICATION TARGET
NOTIFICATION OF REWARD AMOUNT
1604
APPLICATION FOR PARTICIPATION
REQUEST FOR VARIOUS NECESSARY DATA
1605
SUBMISSION OF DATA
PARTICIPATION APPROVAL, INSTALLMENT OF COORDINATION CONTROLLER
ACTING FOR LINKAGE APPLICATION
LINKAGE APPROVAL
1606
SELLING OF ELECTRICITY
REWARD FOR THE SALE OF ELECTRICITY
1607
CONTROL SCHEDULE
CONTROL RESULTS REPORT
PHASE-MODIFICATION REWARD
PHASE-MODIFICATION REWARD ALLOCATION+CORRECTION OF REWARD FOR THE SALE OF ELECTRICITY
1608